

**Forest Service Handbook  
National Headquarters - Washington Office  
Washington, DC**

**Forest Service Handbook 2409.12a – Timber Volume Estimator Handbook  
Chapter 20 - Data Storage and Maintenance**

**Amendment:** 2409.12a-1993-1

**Effective date:** December 23, 1993

**Duration:** This amendment is effective until superseded or removed.

**Approved by:** Jack Ward Thomas, Chief

**Date approved:**

**Responsible Staff:**

**Last Change:**

**Superseded Document(s):**

**Digest:** Following is an explanation of the changes throughout the directive by section.

**2409.12a:** Establishes new Timber Volume Estimator Handbook that provides Service-wide standards and instructions for preparation of equations or tables used to estimate the timber content of trees.

Forest Service Handbook 2409.12a – Timber Volume Estimator Handbook

Chapter 20 - Data Storage and Maintenance

Amendment: 2409.12a-1993-1

Effective date: December 23, 1993

Table of Contents

20.2 - Objective .....	3
20.3 - Policy.....	3
21 - Data Base Design .....	3
21.1 - Three Levels of Data.....	3
21.11 - Unique Identity.....	5
21.2 - Selected Data Elements.....	6

## **20.2 - Objective**

To store tree profile data in a form that is edited, documented, and easily aggregated across geographic and administrative boundaries.

## **20.3 - Policy**

Standardized volume estimator and stem profile data bases shall reside in local data bases used by those preparing volume estimators for timber. Prior to collecting volume estimator and stem profile data, the Region or Station shall design a data base in which to store the data. The design and basic elements of this data base shall conform to national standards and shall be reviewed by the national data base coordinator before collecting field data so that data between Regions and Stations may be aggregated.

## **21 - Data Base Design**

Design and prepare a separate data base for each Region and Station. Include the required data elements that are listed in section 12, exhibit 02.

### **21.1 - Three Levels of Data**

Include three levels of data in each data base:

1. Location data.
2. Tree data.
3. Segment data

Table 01 is a diagram of a three-level data base.

Forest Service Handbook 2409.12a – Timber Volume Estimator Handbook  
Chapter 20 - Data Storage and Maintenance  
Amendment: 2409.12a-1993-1  
Effective date: December 23, 1993  
**21.1 - Table 01**

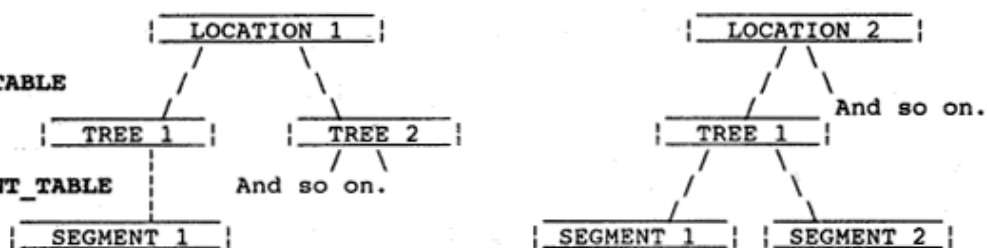
21.1 - Table 01

Diagram of a Three Level Data Base 1/

LOCATION\_TABLE

TREE\_TABLE

SEGMENT\_TABLE



1/ Establish the relationship between LOCATION and TREE as ONE to MANY and between TREE and SEGMENT as ONE to MANY, since there may be several trees measured for one location, and several segments for a single tree.

### 21.11 - Unique Identity

Ensure that each data base and data table has a unique identity that conforms to the standard format described in this section. See section 21.1 for a diagram of the relationships. Name the data base tables as shown in table 01. Use unique relational data base identification keys for each table as indicated in table 02. See FSH 2409.14, section 71 for coding of location ID.

#### 21.11 - Table 01

##### Table Names

1. TBR\_VOL\_EST\_LOCATION\_TABLE.
2. TBR\_VOL\_EST\_TREE\_TABLE.
3. TBR\_VOL\_EST\_SEGMENT\_TABLE.

#### 21.11 - Table 02

##### Unique Relational Data Base Identification Keys

1. TBR\_VOL\_EST\_LOCATION\_TABLE, key is:
  - a. Location ID Number.
2. TBR\_VOL\_EST\_TREE\_TABLE key includes:
  - a. Location ID Number, plus;
  - b. Sample Point Number, plus;
  - c. Tree Number.
3. TBR\_VOL\_EST\_SEGMENT\_TABLE key includes:
  - a. Location Number, plus;
  - b. Sample Point Number, plus;
  - c. Tree Number, plus;
  - d. Segment Number, plus;
  - e. Segment ID, if any.

## **21.2 - Selected Data Elements**

As a minimum, include the required data elements (sec. 12, exhibit 01) in each Region or Station data base for all three tables . See section 13.1, exhibits 01-04 for the field descriptions. Add other optional elements if needed, but ensure that they conform to the Nationwide names of elements as well as their definitions (FSH 2409.14, Chapter 70). Contact the national data base coordinator for assistance (sec 04.13). Contact the Washington Office Director of Timber Management if approval of new elements is necessary (sec. 04.12).